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(54) A capacitor and method of manufacture thereof

(57) The purpose of this invention is to provide a ferroelectric capacitor and a ferroelectric memory device, which: can perform stable operation without causing a resistivity change that is considered to be caused due to the leakage current and the oxygen diffusion; in which it is difficult for dielectric fatigue to be caused in the ferroelectric capacitor, even by repeated inversions; and in which long life and high reliability can be maintained; and to provide their manufacturing method. The constitution of this invention includes a ferroelectric capacitor CAP which has Ir lower electrode (13), PZT thin film (14), and Ir upper electrode (15) and in which crystal grain layers (14a,14b,and 14c) constituted by assembling crystal grains (50a,50b,and 50c) by means of grain boundaries (51a,51b, and 51c) are laminated by means of grain boundaries (52A and 52B) along the surface of the Ir electrode (13), so that the ferroelectric film (14) is formed. A method for manufacturing the ferroelectric capacitor CAP, which meets all of the important conditions of 1) selection of an optimum electrode substance such as Ir; 2) control of crystal growth direction by means of TiO_x nucleus attachment and a surplus of Pb; and 3) optimum annealing temperature for eliminating surface precipitates; and which deposits a titanium oxide, forms a ferroelectric film material layer containing a surplus of lead on it, heats it at a temperature at which the surface precipitates are substantially lost, and laminates each crystal grain layer (14a,14b, and 14c) by repeating the above processes.

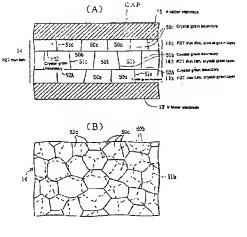

FIG. 1. Structure of the PZT thin film capacitor of this embodiment

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EUROPEAN SEARCH REPORT

Application Number
EP 97 30 5657

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	4 November 1997	Juhl, A

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